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Before the
FEDERAL COMMUNICATIONS COMMISSION
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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

In the Matter of

**Routine Licensing of Large Numbers of Small Antenna
Earth Stations Operating in the Ka Band**

RM-9005

SUPPLEMENTAL COMMENTS OF TELEDESIC CORPORATION

Teledesic Corporation¹ hereby submits these Supplemental Comments in response to the Commission's public notice of September 5, 1997. Teledesic wishes to make three points. First, blanket licensing of standard user terminals for Fixed Satellite Service ("FSS") in the 17.7-20.2 GHz and 27.5-30.0 GHz bands ("Ka band") is essential if the Commission, the satellite industry, and terrestrial Fixed Service ("FS") operators alike are to avoid the crushing administrative burden that would accompany site-by-site licensing in these bands. Second, blanket licensing is possible in the United States even in frequencies shared by FS and FSS licensees, because FSS earth stations in those frequencies will only *receive* interference from FS transmitters; they will not *cause* interference to FS stations or to each other, which makes site-by-site coordination unnecessary. Third, the blanket licensing process could be streamlined even further by adopting complete band segmentation between satellite and terrestrial uses in the 17.7-19.7 GHz band.

¹ Teledesic is licensed to construct, launch, and operate a constellation of non-geostationary orbit ("NGSO") satellites providing Fixed Satellite Service ("FSS") with service links in the 18.8-19.3 GHz and 28.6-29.1 GHz bands. The Teledesic Network will provide switched, broadband network connections through service partners in host countries worldwide, from the largest urban centers to the most remote villages.

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1. Blanket Licensing is Essential. FSS systems in the Ka band will provide service directly to end-users — tens of millions of end-users, who will typically own their own user terminals. This high-density deployment of FSS user terminals cannot take place unless the Commission eliminates the cost and delay that are associated with licensing of individual earth stations. Blanket licensing is equally important for the Commission, as individual processing of millions of earth station applications would quickly clog the administrative apparatus that has been developed for the far less numerous earth stations in lower frequency bands. In addition, the transportability foreseen for FSS user terminals in these frequencies suggests that blanket licensing may be the only way for the Commission to permit terminals to be carried into the United States by non-residents while nonetheless ensuring that all use within the United States complies with the Commission's requirements.² For all of these reasons, routine or "blanket" licensing of Ka-band earth stations is critically important to the introduction of interactive, broadband satellite services.

2. Blanket Licensing is Possible. As Teledesic noted in its initial Comments in this proceeding, the presence of terrestrial services in some portions of the Ka band need not delay the implementation of blanket licensing. There is ample precedent for blanket licensing of equipment even where spectrum is shared by different services and coordination is required. For example, in both the Radiodetermination Satellite Service³ and the Specialized Mobile Radio Service,⁴ the

² See Amendment of the Commission's Rules to Establish Rules and Policies Pertaining to a Non-Voice, Non-Geostationary Mobile Satellite Service, 8 F.C.C. Rcd. 8450, 8454 (1993).

³ Amendment to the Commission's Rules to Allocate Spectrum for, and to Establish Other Rules and Policies Pertaining to, a Radiodetermination Satellite Service, 104 F.C.C.2d 650, 666-67 (1986).

Commission has reduced administrative cost and delay by issuing blanket licenses but requiring licensees to conduct the necessary coordination. A similar approach should be implemented in the FSS portions of the 17.7-20.2 GHz and 27.5-30.0 GHz bands.

Blanket licensing for FSS terminals is greatly facilitated by the fact that under the FCC's band plan for these frequencies, *the only interference between FS stations and FSS earth stations is the interference suffered by FSS user terminals in the downlink frequencies.*⁵ Although the installation of an FS station may often cause harmful interference to FSS earth stations already operating within a certain distance of the proposed site, FSS earth stations can be installed without causing any such interference to FS stations or to each other. Thus, neither the protection of licensed FS stations nor any other public interest benefit makes it necessary for the Commission to require FSS providers to conduct site-by-site coordination with nearby FS station operators in advance of installing FSS user terminals in the U.S. Moreover, since FSS is the "victim" service, the threat of harmful interference would give FSS blanket licensees a fully sufficient, natural incentive to avoid locating their terminals too close to FS stations, even in the absence of a Commission-imposed requirement of site-by-site coordination.⁶ Since prior

⁴ Amendment of Part 90 of the Commission's Rules to Eliminate Separate Licensing of End Users of Specialized Mobile Radio Systems, 7 F.C.C. Rcd. 5558, 5559 (1992).

⁵ FSS earth stations cannot interfere with FS stations in the 17.7-19.7 GHz band because the FSS networks use these frequencies only for reception of space station transmissions. Although *space* stations transmitting at low elevation angles might interfere with FS stations in these frequencies, this is a problem that is not addressed by *earth* station coordination or licensing.

⁶ Installation of an FSS user terminal would, of course, affect the future availability of sites for FS stations, because the obligation to avoid interfering with operational FSS user terminals would prevent FS installations within an exclusion zone around each FSS user terminal. Thus, FS operators do need to know where FSS stations are ultimately placed. However, this can be accomplished by requiring, as a

coordination would serve no useful purpose, and is not necessary in light of the natural incentives that are present, the Commission can and should authorize blanket licensing of FSS user terminals even in bands shared with terrestrial users.

3. The Commission Should Consolidate Terrestrial Operations in the 17.7-19.7 GHz Band. Although blanket licensing of FSS user terminals is already possible under the FCC's band plan because of the direction in which the interference occurs, there are a number of reasons why the better long-term solution would be for the Commission to provide separate spectrum for satellite and terrestrial uses throughout the 17.7-19.7 GHz band. This would parallel the segmentation that has already occurred in the 27.5-30.0 GHz band, as well as the segmentation the Commission has proposed in the 36.0-51.4 GHz band.

Resegmentation has three advantages that would be difficult or impossible to realize under the existing frequency plan. First, further segmentation of the band would make it possible for the authorized FSS services to achieve the ubiquity that provides such a large part of the public interest benefit of these systems. Without resegmentation, the exclusion zones created by FS operations will always create "dead" spots where it is simply impossible to locate any FSS user terminals. In some metropolitan areas, the density of FS use could make these "dead" spots quite large. The problem is exacerbated by the fact that the broadband FSS uses authorized in these frequencies may often cover frequencies used by a number of different terrestrial services.⁷ Even

condition of receiving protection from interference, that each FSS station operated under a blanket license be included in a database maintained by the FSS blanket licensee. The database could be made available for inspection upon the request of any potential FS applicant, and an updated version could be filed periodically with the Commission for public inspection.

⁷ For example, the 18.8-19.3 GHz frequencies assigned to Teledesic for downlinks to its user terminals currently require co-frequency operation with terrestrial

if the density of each individual terrestrial service leaves some room for FSS deployment, the cumulative effect of all the exclusion zones created by three or four different terrestrial services will severely limit the availability of FSS service in many urban areas.

Second, further segmentation of the band would greatly simplify the administrative aspects of deploying both FSS and FS stations throughout the 17.7-19.7 GHz band. Because terrestrial FS users are required to protect operational FSS earth stations — and because FSS operators are unable to provide interference-free service to customers located too close to operational FS transmitters — co-frequency operations require all operators in each service to know exactly where all the operational stations in both services are located. This is true even under the blanket licensing approach outlined above. If, however, the Commission were to consolidate FS uses in a narrower portion of the band, the coordination burden on both terrestrial operators and satellite operators would be significantly lightened. In addition, resegmentation would permit the Commission to harmonize the coordination rules currently in effect for the various services, which are not entirely consistent at the present time.⁸

Third, resegmentation would permit FSS users to take advantage of the deployment flexibility that will be possible for Ka-band FSS earth stations. Basic user terminals for some if

⁸ stations in the Television Broadcast Auxiliary Service (Part 74), the Aural Broadcast Auxiliary Service (Part 74), the Cable Television Relay Service (Part 78), and the Private and Common Carrier Operational Fixed Services (Part 101). For example, it appears that the Part 74 services are governed by a coordination regime that provides strong interference protection for certain types of transmissions and much weaker interference protection for other types of transmissions. *See* 47 C.F.R. § 74.503(b); *see also* 47 C.F.R. § 74.604(c). It is not at all clear how this “sliding scale” regime can be maintained if the Part 74 services must operate co-primary with services governed by Parts 25 or 101, which embody a more traditional coordination regime, *i.e.*, one that accords priority based on incumbency without regard to the nature of the transmission.

not all FSS systems are likely to be transportable, but co-frequency operation makes it impossible to protect FSS users from harmful interference in any location that has not been specifically coordinated. Although it might be possible to coordinate the same FSS earth station for multiple alternative sites, even that would not make it possible to take advantage of all the portability the technology permits. Resegmentation, on the other hand, would facilitate limitless portability by eliminating almost entirely any need to consider the possibility of interference to or from other FS or FSS stations.

Proponents of co-frequency operation often base their arguments on the tacit assumption that spectrum efficiency is maximized by maximizing the number of services or systems that can be squeezed into any given slice of the airwaves. This assumption does not withstand scrutiny. There is nothing spectrally efficient about scattering four or five terrestrial services throughout the band in such a way as to make broadband satellite operations impossible in many of the most heavily populated areas. Indeed, without resegmentation in this case, interference from terrestrial stations will lead to chronic under-use of FSS frequencies not only on the downlink frequencies where the terrestrial stations operate, but in the associated uplink frequencies as well. This cannot be characterized as spectrally efficient. Under these circumstances, the public will benefit much more if the various terrestrial services throughout the band can be consolidated in such a way as to leave each service free to use its designated spectrum as heavily as possible.⁹

⁹ Teledesic is working to develop a detailed plan that would accomplish the suggested resegmentation. Although no such plan has yet been completed, the most promising possibility is to pursue resegmentation in the 17.7-18.8 GHz and 19.3-19.7 GHz frequencies. These frequencies are not currently as useful for FSS as the 19.7-20.2 GHz frequencies (of which geostationary FSS operators already have exclusive use) or the 18.8-19.3 GHz frequencies (which are the *only* FSS

CONCLUSION

Teledesic urges the Commission to issue a Notice of Proposed Rulemaking in this matter quickly. Such a rulemaking should propose not only a procedural vehicle for blanket licensing of FSS earth stations, but also a comprehensive, long-term solution to frequency conflicts between satellite and terrestrial users throughout the 17.7-19.7 GHz band.

Respectfully submitted,

TELEDESIC CORPORATION



Scott Blake Harris

Mark A. Grannis

Jonathan B. Mirsky

GIBSON, DUNN & CRUTCHER LLP

1050 Connecticut Avenue, N.W.

Washington, DC 20036

(202) 955-8500

Its Attorneys

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downlink frequencies where non-geostationary networks can operate free of the burdens imposed by ITU Radio Regulation S22.2).

CERTIFICATE OF SERVICE

I, Jonathan B. Mirsky, do hereby certify that a copy of the foregoing Supplemental Comments of Teledesic Corporation have been sent, via first class mail, postage prepaid on this 24th day of September, 1997 to the following:

Ray Bender, Esq.
Dow, Lohnes & Albertson
Suite 800
1200 New Hampshire Ave., NW
Washington, D.C. 20036

R. Victor Bernstein, Esq.
Judy Sello, Esq.
AT&T Corp.
Room 3245G1
295 North Maple Avenue
Basking Ridge, NJ 07920

Peter Rohrbach, Esq.
Hogan & Hartson
555 13th Street, NW
Washington, DC 20004

Debra Smiley-Weiner, Esq.
Lockheed Martin Telecommunications
1272 Borregas Avenue
Building 551
Sunnyvale, CA 94089

William K. Coulter, Esq.
Baker, Donelson, Bearman & Caldwell
Suite 800
801 Pennsylvania Avenue, N.W.
Washington, D.C. 20004

Daniel S. Goldberg, Esq.
Goldberg, Godles, Wiener & Wright
1229 19th Street, N.W.
Washington, D.C. 20036

Gary M. Epstein, Esq.
John P. Janka, Esq.
Latham & Watkins
Suite 1300
1001 Pennsylvania Ave., NW
Washington, DC 20004

Philip L. Verveer, Esq.
Andrew R. D'Uva, Esq.
Nicos L. Tsilas, Esq.
Willkie Farr & Gallagher
Three Lafayette Centre
1155 21st Street, NW
Washington, DC 20036

Philip L. Malet, Esq.
Steptoe & Johnson
1330 Connecticut Avenue, N.W.
Washington, D.C. 20036

Philip V. Otero
Vice President & General Counsel
GE Americom Communications
Four Research Way
Princeton, NJ 08540

Judy Sello, Esq.
AT&T Corp.
Room 3245G1
295 North Maple Avenue
Basking Ridge, NJ 07920

Albert Shuldiner, Esq.
Vinson & Elkins
1455 Pennsylvania Avenue, N.W.
Washington, D.C. 20004-1008


Charles Milkis, Esq.
Law Offices of Michael R. Gardner
1150 Connecticut Avenue, N.W.
Suite 710
Washington, D.C. 20036

David G. O'Neil, Esq.
Rini Coran & Lancellotta, P.C.
1350 Connecticut Avenue, N.W.
Washington, D.C. 20036

Frank Young, Esq.
Young & Jatlow
2300 N Street, N.W.
Washington, D.C. 20037

Julian L. Shepard, Esq.
Verner Liipfert Bernard McPherson
& Hand, Chartered
901 15th Street, N.W., Suite 700
Washington, D.C. 20005-2301

Jennifer A. Warren
Gerald Musarra
Lockheed Martin
1725 Jefferson Davis Highway
Crystal Square 2, Suite 300
Arlington, VA 22202


Jonathan B. Mirsky

WA972670.045/1+